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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/526,308	03/02/2005	Markus Ohnmacht	R.304253	3846
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2119	7590	07/14/2006
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EXAMINER

MCGRAW, TREVOR EDWIN

ART UNIT	PAPER NUMBER
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3752

DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/526,308

Applicant(s)

OHNMACHT ET AL.

Examiner

Trevor McGraw

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-49 is/are pending in the application.
- 4a) Of the above claim(s) 26, 27, 29, 31, 37, 39-47 and 49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25, 28, 30, 32-36, 38 and 48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/26/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions & Response to Arguments

Applicant's election with traverse of Species II in the reply filed on 05/19/2006 is acknowledged. The traversal is on the ground(s) that a US National Stage applications are subject to unity of invention practice in accordance with 37 CFR 1.475 and 1.499 and further PCT Rule 13.1 and article 27(1), both state that a designated Office shall not doubt the unity of invention if no objections have been raised in the international phase. This is not found persuasive because due to the fact that applicant presents more than one general inventive concept as required by PCT Rule 13.1 as present in the multiple inventive concepts within applicant's figures. Examiner was not able to locate the wording of applicant's reference to Article 27(1) that a designated office shall not doubt the unity of invention if no objections have been raised in the international phase.

The requirement is still deemed proper and is therefore made FINAL.

Claims 26, 27, 29, 31, 37, 39-47 and 49 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species, as the various depictions of recesses on the valve face with there being no allowable generic or linking claim. Regarding claim 26, Examiner disagrees with applicant's assertion that claim 26 reads on the elected species because the elected species do not depict the recesses as shown in Figure 2 as roughening on the valve sealing face. Regarding claim 29, Examiner disagrees with applicant's assertion that claim 29 reads on the elected species because the elected species does not depict a dead end volume as shown in Figures 9 and 14. Regarding claim 42, Examiner disagrees with applicant's assertion

that claim 42 reads on the elected species because the elected species does not have recesses on the valve seat.

Applicant timely traversed the restriction (election) requirement in the reply filed on 05/19/2006.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the jacket lines in claim 36 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: Paragraph 34 line 11 and 35 line 6 Injection Openings is designated as "11" and "14".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 25, 28, 30 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Haeberer et al. (WO/02/01066).

In regard to claims 25, 28, 30, 33 and 48 Haeberer et al. (WO/02/01066) teaches a fuel injection valve for an internal combustion engine where the valve comprises a valve body (1), a bore (3) defined on its end toward the combustion chamber by a conical valve seat (9), a piston valve needle (5) disposed longitudinally in the bore (3) with the valve needle (5) having a sealing face (30) that includes two conical faces (32) on its end toward the combustion chamber where one of the conical faces (32) is disposed on the combustion chamber side of the first conical face (30) where an

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annular groove (35) extends between the conical faces (32) where the end of the annular groove (35) faces away from the combustion chamber acting as a sealing edge upon contact of the valve sealing face (30) with the valve seat (9) and a plurality of recesses (55) embodied on the valve sealing face where the recesses (55) hydraulically connect the annular groove (35) with a portion of the second conical face (32) located on the combustion chamber side of the annular groove where the recesses (55) are embodied as a plurality of elongated grooves. Haeberer et al. also teaches a fuel injector where the grooves (55) begin in the same radial plane perpendicular to the valve needle (5) and intersect the annular groove (35) and extend in the direction of the combustion chamber and the end of the grooves (55) are located within the annular groove (35).

In regard the claim 48, the patentability of the product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product in the prior art, the claim is unpatentable even though the prior product was made by a different process (see MPEP 2113).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 32-36, 38 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haeberer et al. (WO/02/01066) in view of Schorr et al. (WO/02/064969). Although Haeberer et al. as described above teaches grooves (55) being affixed on a conical face of a valve body, it fails to teach the grooves being produced through a laser process at a microscopic depth less than 50 μm and a width between 5 μm to 50 μm where the depth of the grooves are from 1 to 10 times their width. However, Schorr et al. (WO/02/064969) recognizes that the size of the grooves is a results-effective variable, i.e. a variable that achieve a recognized result. In the instant case, the size of the grooves are a depth of less than 50 μm and a width between 5 μm and 50 μm where the depth of the grooves are from 1 to 10 times their width. Schorr et al. teaches To prevent the leak fuel flow from the pressure chamber 19 into the leak fuel chamber 15 from assuming excessively high values, the cross section of the recesses 30 must be kept relatively small. To achieve that, the recesses 30 have a depth of from 1 to 50 μm , preferably 2 to 10 μm . The width of the channel like

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recesses 30 is preferably from 100 to 500 μm , and the cross-sectional shapes of the recesses can for instance be rectangular, circular-segmental, triangular, or U-shaped. Beginning at the end of the sealing portion 105 toward the combustion chamber, the recesses extend over approximately one-half to approximately three-fourths of the length of the sealing portion 105. In this way, the leak fuel flow that flows through the recesses 30 and from there through the annular gap 17 to the inside of the leak fuel chamber 15 is kept within reasonable limits. Since the prior art recognizes this as a results-effective variable, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have chosen the size of the grooves to be at a microscopic depth less than 50 μm and a width between 5 μm to 50 μm where the depth of the grooves are from 1 to 10 times their width, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05).

In regard to claim 48, the patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product in the prior art, the claim is unpatentable even though the prior product was made by a different process (see MPEP 2113).

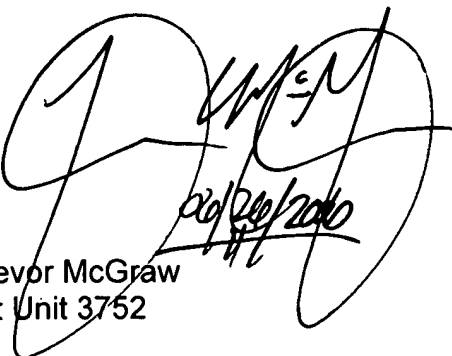
Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ball (US 2,407,915), Ricco (US 6,666,388), Mock (US 1,952,816).

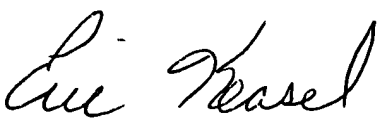
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trevor McGraw whose telephone number is (571) 272-7375. The examiner can normally be reached on Monday-Friday (2nd & 4th Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel can be reached on (571) 272-4919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Trevor McGraw
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TEM



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